

U.S. Department of the Interior  
Bureau of Land Management  
Little Snake Field Office  
455 Emerson Street  
Craig, CO 81625-1129

## ENVIRONMENTAL ASSESSMENT

**EA-NUMBER:** DOI-BLM-CO-N010-2010-0045-EA

**CASEFILE/PROJECT NUMBER/LEASE NUMBER:** COC61504

**PROJECT NAME:** Cherokee Ridge Well #27-31

**LEGAL DESCRIPTION:**

Cherokee Ridge Well #27-31: NWNE section 27, T12N, R95W, 6<sup>th</sup> P.M.

**APPLICANT:** Quicksilver Resources

**PLAN CONFORMANCE REVIEW:** The proposed action is subject to the following plan:

Name of Plans: Little Snake Resource Management Plan and Record of Decision (ROD), approved on April 26, 1989; and the Colorado Oil and Gas Leasing & Development Environmental Impact Statement (EIS) and the ROD signed on November 5, 1991.

Remarks: The proposed Cherokee Ridge Well #27-31 would be located within Management Unit 2 (Little Snake Resource Management Plan). One of the objectives of Management Unit 2 is to provide for the development of the oil and gas resource. The development of other resource uses/values within this unit is allowed consistent with the management objectives for oil, gas, and forest resources.

The proposed action was reviewed for conformance with this plan (43 CFR 1610.5, BLM 1617.3). The proposed action is in conformance with the objectives for this management unit.

**NEED FOR PROPOSED ACTION:** To provide for the development of oil and gas resources and to supply energy resources to the American public.

**PUBLIC SCOPING PROCESS:** The Notice of Staking (NOS) has been posted in the public room of the Little Snake Field Office for a 30-day public review period beginning November 02, 2009 when the NOS was received, and may be viewed during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays.

**DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:** The proposed action would be to approve one Application for Permit to Drill (APD) submitted by Quicksilver Resources. Quicksilver Resources proposes to drill one gas well on Federal land over Federal minerals located in the NWNE Sec. 27, T12N, R95W, 6<sup>th</sup> P.M. An APD has been filed with the LSFO for the Cherokee Ridge Well #27-31. The APD includes drilling and surface use plans that cover mitigation of impacts to vegetation, soil, surface water, and other resources. Mitigation not incorporated by Quicksilver Resources in the drilling and surface use plan would be attached by the BLM as Conditions of Approval to an approved APD.

The proposed well would be located approximately 39.1 miles south west from the town of Baggs, WY. Construction work is planned to start during the summer of 2010 and the estimated duration of construction and drilling for the well would be 80 days. 1.2 miles of new access road would be constructed for the well. Approximately 6,336 feet of new access road would be constructed resulting in new surface disturbance of 4.5 acres. All road construction would be within the Cherokee Ridge Unit and would not require a federal Right-of-Way.

The proposed well pad would be cleared of all vegetation and leveled for drilling. Topsoil and native vegetation would be stockpiled for use in reclamation. Approximately 4.5 acres would be disturbed for construction of the well pad. This would include the 396' by 460' well pad, the topsoil, and subsoil piles. A reserve pit would be constructed on the well pad to hold drill mud and cuttings. If the well is a producer, cut portions of the well site would be backfilled and unused portions of the well site would be stabilized and re-vegetated. If the gas well proves unproductive, it would be properly plugged and the entire well pad and access road would be reclaimed.

Quicksilver Resources did not include plans for a gas sales pipeline with the APD.

Total surface disturbance for the proposed action would be 9.0 acres.

**NO ACTION ALTERNATIVE:** The "no action" alternative is that the well would not be permitted and therefore the well would not be drilled. Quicksilver Resources holds a valid and current oil and gas lease for the area where the proposed Cherokee Ridge Well #27-31 would be located. Under leasing contracts, the BLM has an obligation to allow mineral development if the environmental consequences are not irreversible or too severe. The APD process is designed to overcome the no action situation of not accepting the APD through the mitigation of predicted environmental consequences. Since the proposed action is consistent with the ROD and the Oil and Gas Leasing EIS the no action alternative will not be analyzed further in this EA.

## **AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES/MITIGATION MEASURES**

### **CRITICAL RESOURCES**

## **AIR QUALITY**

Affected Environment: There are no special designation air sheds or non-attainment areas nearby that would be affected by the proposed action.

Environmental Consequences: Short term, local impacts to air quality from dust would result during and after well pad construction. Drilling operations produce air emissions such as exhaust from diesel engines that power drilling equipment. Air pollutants could include nitrogen oxides, particulates, ozone, volatile organic compounds, fugitive natural gas, and carbon monoxide. Gas flaring reduces the health and safety risks in the vicinity of the well by burning combustible and poisonous gases like methane and hydrogen sulfide.

Mitigative Measures: None.

Name of specialist and date: Shawn Wiser 02/08/10

## **AREA OF CRITICAL ENVIRONMENTAL CONCERN**

Affected Environment: Not Present.

Environmental Consequences: Not Applicable.

Mitigative Measures: Not Applicable.

Name of specialist and date: Kimberly Miller 02/08/10

## **CULTURAL RESOURCES**

Affected Environment: Cultural resources, in this region of Colorado, range from late Paleo-Indian to Historic. For a general understanding of the cultural resources in this area of Colorado, see *An Overview of Prehistoric Cultural Resources, Little Snake Resource Area, Northwestern Colorado*, Bureau of Land Management Colorado, Cultural Resource Series, Number 20, *An Isolated Empire, A History of Northwestern Colorado*, Bureau of Land Management Colorado, Cultural Resource Series, Number 2 and *Colorado Prehistory: A Context for the Northern Colorado River Basin*, Colorado Council of Professional Archaeologists.

Environmental Consequences: The proposed project, Cherokee Ridge 27-31, has undergone a Class III cultural resource survey:

Davenport, Barbara and Carl Conner  
2009 Class III Cultural Resources Inventory for Two Proposed Well Locations and Related Linear Route in Moffat County, Colorado for Quicksilver Resources, Inc. (BLM 11.1.2010)

The survey identified no eligible to the National Register of Historic Places cultural resources. The proposed project may proceed as described with the following mitigative measures in place.

**Mitigative Measures:**

The following standard stipulations apply for this project:

1. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the authorized officer (AO) at (970) 826-5000. Within five working days, the AO will inform the operator as to:

- Whether the materials appear eligible for the National Register of Historic Places;
- The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
- Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone at (970) 826-5000, and with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

2. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

Name of specialist and date: Robyn Watkins Morris 02/16/10

## **ENVIRONMENTAL JUSTICE**

**Affected Environment:** The proposed action would be located in an area of isolated dwellings. Oil & gas development and ranching are the primary economic activities.

**Environmental Consequences:** The proposed action would not directly affect the social, cultural or economic well-being and health of Native American, minority or low-income populations. The project area is remote and relatively isolated from population centers, so no populations would be affected by physical or socioeconomic impacts of the proposed action.

Mitigative Measures: None.

Name of specialist and date: Barb Blackstun 02/10/10

## **FLOOD PLAINS**

Affected Environment: Active floodplains and flood prone zones would be avoided.

Environmental Consequences: No threat to human safety, life, welfare, or property would result from the proposed action.

Mitigative Measures: None.

Name of specialist and date: Shawn Wiser 02/08/10

## **INVASIVE, NONNATIVE SPECIES**

Affected Environment: Invasive species and noxious weeds occur within the affected area. Downy brome (cheatgrass), yellow alyssum, blue mustard and other annual weeds are common along roadsides and on other disturbed areas. Canada thistle and several species of biennial thistles are known to occur in this area. Halogeton has become a very noticeable problem in the affected area, as well as other areas in the western portion of Moffat County. Russian knapweed and hoary cress (whiteweed) have been found in the vicinity of these projects. Other species of noxious weeds are not known to be a problem in this area, but they can always be introduced by vehicle traffic, livestock and wildlife. The BLM, Moffat County, livestock operators, pipeline companies and oil and gas operators have formed the Northwest Colorado Weed Partnership to collaborate their efforts on controlling weeds and finding the best integrated approaches to achieve these results.

Environmental Consequences: The surface disturbing activities and associated traffic involved with drilling this well, constructing the access road, installing the pipeline and subsequent activities would create an environment and provide a mode of transport for invasive species and other noxious weeds to become established. Construction equipment and any other vehicles and equipment brought onto the site can introduce weed species. Wind, water, recreation vehicles, livestock and wildlife would also assist with the distribution of weed seed into the newly disturbed areas. The annual invasive weed species (yellow alyssum, blue mustard and other annual weeds) occur on adjacent rangelands and would occupy the disturbed areas; the bare soils and the lack of competition from a perennial plant community would allow these weed species to grow unchecked and can affect the establishment of seeded plant species. Halogeton is a noxious annual weed that would also occupy the disturbed areas, but this weed species would likely require intensive control with herbicides to prevent it from moving into adjacent rangelands. Establishment of perennial grasses and other seeded plants is expected to provide the necessary control of invasive annual weeds within 2 or 3 years. Additional seeding treatments of the disturbed areas may be required in subsequent years if initial seeding efforts have failed.

The perennial and biennial noxious weeds in the area are less frequently established on the uplands but some potential exists for their establishment in draws and swales or areas along the road that would collect additional water. The largest concern in the project area would be for these species to become established and not be detected, providing seed which can be moved onto adjacent rangelands. The operator would be required to control any invasive and/or noxious weeds that become established within the disturbed areas involved with drilling and operating the well.

Mitigative Measures: Mitigation attached as Conditions of Approval to minimize disturbance and obtain successful reclamation of the disturbed areas, as well as weed control utilizing integrated practices, including herbicide applications would help to control the noxious weed species. All principles of Integrated Pest Management should be employed to control noxious and invasive weeds on public lands.

Name of specialist and date: Shawn Wiser 02/08/10

## **MIGRATORY BIRDS**

Affected Environment: BLM Instruction Memorandum No. 2008-050 provides guidance towards meeting BLM's responsibilities under the Migratory Bird Treaty Act (MBTA) and the Executive Order (EO) 13186. The guidance emphasizes management of habitat for species of conservation concern by avoiding or minimizing negative impacts and restoring and enhancing habitat quality. The LSFO provides both foraging and nesting habitat for a variety of migratory bird species. Several species on the USFWS's Birds of Conservation Concern (BCC) List occupy these habitats within the LSFO. The project would be located in the Northern Rockies Bird Conservation Region.

Specific to the project area, native plant communities are comprised primarily of sagebrush with an understory of grasses and forbs. Three species listed on the BCC list, sage thrasher, Brewer's sparrow and sage sparrow potentially nest in the area. There are no active raptor nests in the vicinity of the Proposed Action.

Environmental Consequences: The Proposed Action would remove 9.0 acres of migratory bird habitat throughout the project area. Although this disturbance would be minimal on a landscape level, it would decrease patch size and may degrade habitat on a small scale. Indirectly, habitat effectiveness adjacent to the well pad would be reduced as a result of noise and human activity during construction, drilling and completion activities. The well would be scheduled for drilling in the summer and has potential to overlap with the nesting period. If drilling activities occur during the nesting season (typically 5/15 – 7/15), there could be negative impacts to migratory bird species through nest destruction or increased stress leading to nest abandonment. Since only 9.0 acres of habitat would be disturbed potential for these impacts would be relatively low. Overall, the project would not be expected to impact migratory birds on a landscape level.

Mitigative Measures: None.

Name of Specialist and Date: Desa Ausmus 02/12/10

## **NATIVE AMERICAN RELIGIOUS CONCERNS**

A letter was sent to the Eastern Shoshone, Uinta and Ouray Tribal Council, Southern Ute Tribal Council, Ute Mountain Ute Tribal Council on May 26, 2009. The letter listed the FY2010 projects that the BLM would notify them on and projects that would not require notification. A follow-up phone call was performed on July 26, 2009. No comments were received (Letter on file at the Little Snake Field Office). This project requires no additional notification.

Name of specialist and date: Robyn Watkins Morris 02/16/10

## **PRIME & UNIQUE FARMLANDS**

Affected Environment: Not Present.

Environmental Consequences: None.

Mitigative Measures: None.

Name of specialist and date: Shawn Wiser 02/08/10

## **T&E AND SENSITIVE ANIMALS**

Affected Environment: According to the latest species list from the U. S. Fish and Wildlife Service, the following Federally listed and candidate species may reside, have habitat and/or be impacted by actions occurring in Moffat County: Canada lynx, black-footed ferret, western yellow-billed cuckoo, Mexican spotted owl, razorback sucker, Colorado pikeminnow, bonytail chub, humpback chub, and Ute ladies'-tresses orchid.

The project area would be located upstream of critical habitat for the razorback sucker, Colorado pikeminnow, bonytail chub, and humpback chub. The well site would not provide habitat for any other above listed species and therefore, there would be "no effect" to any of these species.

The proposed well site provides habitat for greater sage-grouse, a BLM sensitive species. There is one historic lek located within a two mile radius of the well site. The area is also on the edge of mapped winter habitat for grouse.

Environmental Consequences: In May 2008, BLM prepared a Programmatic Biological Assessment (PBA) that addresses water depleting activities associated with BLM's fluid minerals program in the Colorado River Basin in Colorado. In response to BLM's PBA, the FWS issued a Programmatic Biological Opinion (PBO) (ES/GJ-6-CO-08-F-0006) on

December 19, 2008, which determined that BLM water depletions from the Colorado River Basin are not likely to jeopardize the continued existence of the Colorado pike minnow, humpback chub, bonytail, or razorback sucker, and that BLM water depletions are not likely to destroy or adversely modify designated critical habitat.

A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin was initiated in January 1988. The Recovery Program serves as the reasonable and prudent alternative to avoid jeopardy and provide recovery to the endangered fishes by depletions from the Colorado River Basin. The PBO addresses water depletions associated with fluid minerals development on BLM lands, including water used for well drilling, hydrostatic testing of pipelines, and dust abatement on roads. The PBO includes reasonable and prudent alternatives developed by the FWS which allow BLM to authorize oil and gas wells that result in water depletion while avoiding the likelihood of jeopardy to the endangered fishes and avoiding destruction or adverse modification of their critical habitat. As a reasonable and prudent alternative in the PBO, FWS authorized BLM to solicit a one-time contribution to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) in the amount equal to the average annual acre-feet depleted by fluid minerals activities on BLM lands.

This project has been entered into the Little Snake Field Office fluid minerals water depletion log which will be submitted to the Colorado State Office at the end of the Fiscal Year.

The project area provides limited habitat for greater sage-grouse. Since the only lek within a two mile radius has been inactive for several years and the closest active lek is over five miles away, it is unlikely that the area would be used for nesting. Sage-grouse could potentially be in the general vicinity of the project during the winter months or when moving to and from other winter or nesting habitat. Impacts to grouse species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, direct loss of habitat, displacement due to disturbances and habitat fragmentation. The proposed well would disturb 9.0 acres of sage-grouse habitat. Although this disturbance would be minimal on a landscape level, it would decrease patch size and may degrade habitat on a small scale. Indirectly, habitat effectiveness adjacent to well pads would be reduced as a result of noise and human activity during construction, drilling and completion activities. Drilling would not be allowed from December 1 to April 30 to prevent impacts to mule deer (see Terrestrial Wildlife Section) and this timing limitation would also prevent impacts to any sage-grouse that may be using the general area during this time period.

Mitigative Measures: None.

Name of Specialist and Date: Desa Ausmus 02/12/10

## **T&E AND SENSITIVE PLANTS**

Affected Environment: There are no federally listed threatened or endangered or BLM sensitive plant species within or in the vicinity of the proposed well.

Environmental Consequences: None.

Mitigative Measures: None.

Name of specialist and date: Hunter Seim 02/16/10

## **WASTES, HAZARDOUS OR SOLID**

Affected Environment: If a release does occur, the environment affected would be dependent on the nature and volume of material released. If there are no releases, there would be no impact on the environment.

Environmental Consequences: Consequences would be dependent on the volume and nature of the material released. In most every situation involving hazardous materials, there are ways to remediate the area that has been contaminated. Short-term consequences would occur, but they can be remedied, and long-term impacts would be minimal.

Mitigative Measures: None.

Name of specialist and date: Shawn Wiser 02/08/10

## **WATER QUALITY – GROUND**

Affected Environment: Potable water is possible in this area. Water within the Wasatch formation is produced from water wells (300' depth) in the area. According to the Colorado Decision Support Systems information, wells are currently active.

Environmental Consequences: With the use of proper construction practices, drilling practices, and best management practices, no significant adverse impact to groundwater aquifers and quality would be anticipated to result from the proposed action. A geologic and engineering review was performed on the 8-point drilling plans to ensure that the cementing and casing programs adequately protect the down-hole resources.

Mitigative Measures: Onshore Order No. 2 requires that the Operator isolate and protect all fresh- to- moderately saline water (TDS < 10,000 PPM) that would be encountered during drilling from communication and contamination with other fluids. The Operator would be required to submit a report showing the depth and analysis of all groundwater encountered during drilling.

Name of specialist and date: Marty O'Mara 02/16/10

## **WATER QUALITY – SURFACE**

**Affected Environment:** The proposed well would be constructed near an ephemeral drainage of Powder Wash, an ephemeral tributary to the Little Snake River and any surface runoff from the well pad or access roads would drain towards into Powder Wash. All tributaries to the Little Snake River in this area are use protected and must meet the beneficial uses of Aquatic Life Warm 2, Recreation N, and Agriculture. While there are no impaired stream segments within the immediate vicinity of the proposed well site, as of 2008 the Little Snake River segment in this area (from Powder Wash to Yampa River) is on the Colorado Department of Public Health and Environment's (CDPHE) Section 303(d) list of Water Quality Limited Segments because of a low priority iron impairment (CDPHE 2008). This segment is also on CDPHE's Monitoring and Evaluation List for a suspected water quality problem regarding sediment load (CDPHE 2008). All tributaries to the Little Snake River are on the monitoring list for suspected *E.coli* and iron water quality problems.

**Environmental Consequences:** Increased sedimentation to Powder Wash during spring runoff or from high intensity rainstorms would be the most likely environmental consequence from the proposed action. Although some sediment may be transported off site and eventually reach perennial waters, the mitigation provided in the Surface Use Plan and the Conditions of Approval would reduce the potential impacts caused by surface runoff. It is unlikely the proposed action would further contribute to any iron or *E. coli* water quality problems.

**Reference:** Colorado Department of Public Health and Environment Water Quality Control Commission. 2008. Regulations #33, 37, 93 and 94. <http://www.cdphe.state.co.us/regulations/wqccregs/index.html>

**Mitigative Measures:** None.

**Name of specialist and date:** Emily Spencer 02/9/10

## **WETLANDS/RIPARIAN ZONES**

**Affected Environment:** There are no identified wetlands, springs, or riparian areas within the proposed project area.

**Environmental Consequences:** None.

**Mitigative Measures:** None.

**Name of specialist and date:** Emily Spencer 02/9/10

## **WILD & SCENIC RIVERS**

**Affected Environment:** Not Present.

Environmental Consequences: Not Applicable.

Mitigative Measures: Not Applicable.

Name of specialist and date: Kimberly Miller 02/08/10

## **WSAs, WILDERNESS CHARACTERISTICS**

Affected Environment: Not Present.

Environmental Consequences: Not Applicable.

Mitigative Measures: Not Applicable.

Name of specialist and date: Kimberly Miller 02/08/10

## **NON-CRITICAL ELEMENTS**

### **FLUID MINERALS**

Affected Environment: The proposed well would be in favorability zone 4 (highest for oil and gas potential). This well would penetrate the Wasatch, Almond, Mancos, and Niobrara Formations.

Environmental Consequences: The casing and cementing program would be adequate to protect all of the resources identified above. All coal seams and fresh water zones would also be protected. The BOP system would be adequately sized. All of these zones would be cased off.

Mitigative Measures: None.

Name of specialist and date: Marty O'Mara 02/12/10

### **PALEONTOLOGY**

Affected Environment: The geologic formation at the surface of the well pad would be the Tertiary Age formation, Wasatch Formation, Cathedral Bluffs Tongue (Twc), a variegated claystone, mudstone and sandstone formation. This formation has been classified a Class II formation for the potential for occurrence of scientifically significant fossils.

Environmental Consequences: Regarding the well pad site, scientifically significant fossils are occasionally found within this formation (Armstrong & Wolney, 1989). The potential for discovery of significant fossils on this location would be considered to be moderate. If any such fossils are located here, construction activities could damage the fossils and the

information that could have been gained from them would be lost. The significance of this impact would depend upon the significance of the fossil. Ceasing operations and notifying the Field Office Manager immediately upon discovery of a fossil during construction activities can effectively mitigate this impact. An assessment of the significance would be made and a plan to retrieve the fossil or the information from the fossil is developed.

The proposed action could also constitute a beneficial impact to paleontological resources by increasing the chances for discovery of scientifically significant fossils.

**Mitigative Measures:** If fossils are discovered during construction or other operations, all activity in the area would cease and the Field Office Manager would be notified immediately. An assessment of significance would be made within an agreed time frame. Operations would resume only upon written notification by the Authorized Officer.

**References:**

Armstrong, Harley J. and Wolney, David G., 1989, Paleontological Resources of Northwest Colorado: A Regional Analysis, Museum of Western Colorado, Grand Junction, CO, prepared for Bur. Land Management, Vol. I of V.

Miller, A.E., 1977, Geology of Moffat County, Colorado, Colo. Geol. Surv. Map Series 3, 1:126,720.

Name of specialist and date: Marty O'Mara 02/16/2010

## SOILS

**Affected Environment:** The table below (Table 1) describes the major soil groups included within the area of the proposed well and related access road.

**Table 1. Soil Summary for Quicksilver Resources Cherokee Ridge Well #27-31**

Soil Map Unit (MU) & Soil Name	Map Unit Setting	Description
MU 8 Badland, 40-75% slopes 12.5% of Project area	<u>Elevation:</u> 5,500' – 6,500' <u>Mean annual precipitation:</u> 9-11" <u>Ecological Site:</u> not given	Badland consists of very steep barren land that is dissected by many intermittent drainage channels. These soils are somewhat excessively drained with very slow permeability. Runoff potential is very high and erosion is active. Available water capacity is very low and the soil profile is typically up to 3 inches deep.
MU 200 Tresano sandy loam, 3-12% slopes 87.5% of Project area	<u>Elevation:</u> 6,000' – 7,000' <u>Mean annual precipitation:</u> 9-11" <u>Ecological Site:</u> Loamy 7-10" PPT	These plateau soils are well drained with moderate permeability and medium runoff potential. Available water capacity is moderate and the soil profile is typically 60 inches deep. The main limitation of these soils is very dry climate.

Data taken from *Soil Survey of Moffat County Area, Colorado (2004)*.

**Environmental Consequences:** The construction and operation of the proposed well would affect soils within and immediately adjacent to the proposed area of disturbance. Increased soil erosion from wind and water would occur during construction of the well pad, pipeline, and access road. Erosion would continue throughout the operational life of the well. Loss of topsoil, soil compaction, and possible increases in sediment loads to drainages are impacts most likely to occur.

Vegetation and soil would be removed from approximately 9.0 acres of land. Soil productivity would decline due to reduced soil microbial activity, impaired water infiltration, mixing of soil horizons, top soil loss, and introduction of weeds. Soil loss from construction would be greatest shortly after project start and would decrease in time as a result of stabilization through revegetation and reclamation of disturbed areas. Soil erosion would be reduced to an acceptable level with the mitigation described in the Surface Use Plan and Conditions of Approval in the approved APD. This mitigation would reduce the potential to have excessive sediments and salts in runoff water from the well site.

**Mitigative Measures:** Additional mitigative measures would be employed to prevent or reduce accelerated erosion if it begins to occur within or on constructed drainage and diversion ditches or surface drainages affected by the road or well pad.

Name of specialist and date: Emily Spencer 02/9/10

## **UPLAND VEGETATION**

**Affected Environment:** The proposed well lies in a sagebrush-grass plant community. Dominant plants present include Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), shadscale saltbush (*Atriplex confertifolia*), green rabbitbrush (*Chrysothamnus viscidiflorus*), winterfat (*Euphorbia lanata*), Hood's phlox (*Phlox hoodii*), needleandthread (*Stipa comata*), Indian ricegrass (*Oryzopsis hymenoides*), western wheatgrass (*Agropyron smithii*), bluebunch wheatgrass (*A. spicatum*), squirreltail (*Sitanion hystrix*), galleta (*Hilaria jamesii*), and Sandberg bluegrass (*Poa sandbergii*). The site contains small amounts of nonnative cheatgrass (*Bromus tectorum*) and halogeton (*Halogeton glomeratus*). Overall, the site is a good representation of a mid-seral big sagebrush community. Perennial grasses are abundant and exhibit good vigor. There are likely more forbs on the site, but were not seen due to the late fall season in which the site was visited.

**Environmental Consequences:** The proposed action would completely remove approximately 9.0 acres of native vegetation. This removal would be relatively small within the larger plant community, and there are no other existing wells or other vegetation-disturbing facilities within a one-mile radius. If the proposed well becomes a producer, the well pad would be partially reclaimed with native vegetation per the Conditions of Approval. If the well does not produce, the entire disturbance would be reclaimed with native vegetation per the Conditions of Approval.

Mitigative Measures: None.

Name of specialist and date: Hunter Seim 02/16/10

## **WILDLIFE, TERRESTRIAL**

Affected Environment: Native plant communities in the Proposed Action area are comprised of primarily sagebrush with an understory of grasses and forbs. The general area provides habitat for a variety of big game, small mammals, birds and reptiles. The project area is mapped as pronghorn winter range and mule deer critical winter range by CDOW. The access road crosses a small white-tailed prairie dog town.

Environmental Consequences: Impacts to wildlife species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, displacement into less suitable habitat, increased stress and loss of habitat. These impacts are more significant during critical seasons, such as winter or reproduction. Big game species are often restricted to smaller areas during the winter months and may expend high amounts of energy to move through snow, locate food and maintain body temperature. Disturbances during the winter can displace big game, depleting much needed energy reserves and may lead to decreased over winter survival. Mule deer using critical winter range are likely to be disturbed by noise and human activity associated with well pad construction and drilling. These activities should not be permitted from December 1 to April 30 to prevent impacts to mule deer.

All wildlife species using the area are likely to be displaced during construction activities. The surrounding habitat should be sufficient to support mule deer, pronghorn and other terrestrial wildlife that are displaced during construction. Most animals would return to undisturbed areas after construction is complete and human activity has decreased. The project would disturb 9.0 acres of wildlife habitat. This disturbance would be minimal on a landscape level.

Although many of the prairie dog colonies in the LSFO are beginning to recover from a sylvatic plague epidemic in the mid 1990s, no active prairie dog burrows were found in the small colony along the access road. New road construction provides a corridor for prairie dog movement, increasing the likelihood that inactive towns would be re-colonized in the future.

Mitigative Measures: CO-09 Big game winter range. No surface disturbing activities between December 1 and April 30 in order to prevent disturbance of big game using critical winter range.

Name of Specialist and Date: Desa Ausmus 02/12/10

**OTHER NON-CRITICAL ELEMENTS:**

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Forest Management	SW 02/08/10		
Hydrology/Ground			See Water Quality/Ground
Hydrology/Surface			See Water Quality/Surface
Paleontology			See Paleontology
Range Management		JHS 02/16/10	
Realty Authorizations		BSB 02/10/10	
Recreation/Transportation		KMM 02/08/10	
Socio-Economics		BSB 02/10/10	
Solid Minerals		JAM 02/11/10	
Visual Resources		KMM 02/08/10	
Wild Horse & Burro Mgmt	SW 02/08/10		
Wildlife, Aquatic	DA 02/12/10		

**CUMULATIVE IMPACTS SUMMARY:** Cumulative impacts may result from the development of the Cherokee Ridge Well #27-31 when added to non-project impacts that result from past, present, and reasonably foreseeable future actions. The potential exists for future oil and gas development throughout the Cherokee Ridge Unit. Other past or existing actions near the project area that have influence on the landscape are wildfire, recreation, hunting, grazing, and ranching activities.

Surface disturbance associated with oil and gas activity would increase the potential for erosion and sedimentation. Displacement of hunters and recreationists during the short-term construction and drilling periods would occur. Contrasts in line, form, color, and texture from development would impact the visual qualities on the landscape.

Cumulative impacts to the plant communities within the gas lease and adjacent areas include an incremental reduction of continuity in the plant communities in terms of acreages that remain undisturbed. Loss of continuity results in smaller and smaller areas of undisturbed native vegetation and the potential for loss of integrity within the larger plant community. Fragmented plant communities can lose resilience to natural and man-made disturbance due to isolation of areas from seed sources necessary for proper age class distribution of plants, and subsequently, a greater opportunity for stressors such as drought to have a more severe impact on the plant community as a whole. The increased disturbance also makes native plant communities more susceptible to invasion by annual weeds as vectors for increasing weeds. Even with weed control

measures applied, the potential for weeds to move further into undisturbed remnant areas increases as these remnants become smaller and more isolated from larger undisturbed areas.

Cumulative impacts to the livestock grazing operations in the area would also be increased through the proposed action. The grazing allotment in which this well is proposed is primarily a summer cattle allotment. The growth in wells, roads, and human activity has reduced the availability of forage in this area far beyond direct impacts caused by construction. Halogeton which has increased among the new roads and well pads is toxic to livestock. The resulting impact to grazing activities permitted in the area is a loss of available Animal Unit Months (AUMs), i.e. a loss of the amount of livestock that the allotment can reasonably carry. Due to recent years of drought, the livestock operators have only lightly used these allotments, so direct impacts to grazing activities have not been fully felt.

Habitat fragmentation from well pad construction and the associated roads have likely decreased the nesting suitability for migratory birds in the resource area. Ingelfinger (2001) found that roads associated with oil and gas development have a negative impact on passerines bird species. Bird densities were reduced within 100m of each road. Due to the amount of new road construction and an increase in traffic on these roads, passerine populations in the area are likely decreasing.

The cumulative impacts of additional wells and roads in the Cherokee Ridge Unit would continue to degrade habitat for the greater sage grouse. Fragmentation, mostly due to road construction, is an important factor contributing to a decrease in habitat quality. Disturbances such as higher traffic volume and other human activities also contribute to degradation of habitat quality. Continued oil and gas development would lead to decreased sage grouse use of the habitat.

Although big game species are able to adapt to disturbances better than other wildlife, increased development would still have impacts to mule deer and antelope. Timing stipulations adequately protect big game species during critical times of the year; however, continued oil and gas development would lead to decreased use of the habitat due to increased human activity. A significant amount of vehicle traffic occurs with oil and gas development. Impacts to big game may be vehicle-animal collisions, as these are a major cause of mortality for big game species.

#### References:

Ingelfinger, F. 2001. The Effects of Natural Gas Development on Sagebrush Steppe Passerines in Sublette County, Wyoming. University of Wyoming, Laramie, WY.

#### **STANDARDS:**

##### **SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (animal)**

**STANDARD:** The project area provides habitat for greater sage-grouse, a BLM sensitive species. The Proposed Action would have minimal impacts to sage-grouse habitat and would not preclude this standard from being met.

Name of specialist and date: Desa Ausmus 02/12/10

**PLANT AND ANIMAL COMMUNITY (animal) STANDARD:** The project area provides productive habitat for a variety of wildlife species. The Proposed Action would have minimal impacts to wildlife habitat and would not preclude this standard from being met.

Name of specialist and date: Desa Ausmus 02/12/10

**PLANT AND ANIMAL COMMUNITY (plant) STANDARD:** The location of the proposed well and access road exhibit appropriate species diversity, vigor, and abundance for a Loamy 7-10" ecological site. The site is currently meeting this standard. The proposed action would completely remove 9.0 acres of native vegetation within this community, with approximately 5.5 acres of disturbance persisting if the well is a producer and none of it persisting if it does not produce. If the reclamation standards that are required by the Conditions of Approval are applied and are successful, the impact to the native plant community would be minimized and this standard would be met. If reclamation is not successful or if it is not implemented as required, cheatgrass and halogeton would colonize disturbed areas and would increase in abundance in adjacent undisturbed areas, causing this standard to not be met.

Name of specialist and date: Hunter Seim 02/16/10

**SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (plant) STANDARD:** There are no federally listed threatened or endangered or BLM sensitive plant species within or in the vicinity of the proposed well. This standard does not apply.

Name of specialist and date: Hunter Seim 02/16/10

**RIPARIAN SYSTEMS STANDARD:** There are no wetlands or riparian zones present within the project area. This standard does not apply.

Name of specialist and date: Shawn Wiser 02/08/10

**WATER QUALITY STANDARD:** The proposed action would meet the public land health standard for water quality. Interim reclamation of the unused area on the well pads would be completed to minimize sheet and rill erosion from the well site. When the well pad is no longer needed for production operations, the disturbed well pad and access roads would be reclaimed to approximate original contours, topsoil would be redistributed, and adapted plant species would be reseeded. These Best Management Practices would help to reduce accelerated erosion of the sites. No stream segments near this project are listed as impaired.

Name of specialist and date: Shawn Wiser 02/08/10

**UPLAND SOILS STANDARD:** The proposed action would not meet the upland soil standard for land health, but it is not expected to while the well location and access road are used for operations. The well pad site and access road would not exhibit the characteristics of a healthy

soil. Several Best Management Practices have been designed into the project or are attached as mitigating measures that would reduce impacts to and conserve soil materials. Upland soil health would return to the well pad and access road disturbances after reclamation practices and well abandonment have been successfully achieved.

Name of specialist and date: Shawn Wiser 02/08/10

**PERSONS/AGENCIES CONSULTED:** Uintah and Ouray Tribal Council, Colorado Native American Commission, Colorado State Historic Preservation Office.

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)**  
**EA DOI-BLM-CO-N010-2009-0075**

Based on the analysis of potential environmental impacts contained in the EA and all other available information, I have determined that the proposal and the alternatives analyzed do not constitute a major Federal action that would adversely impact the quality of the human environment. Therefore, an EIS is unnecessary and will not be prepared. This determination is based on the following factors:

1. Beneficial, adverse, direct, indirect, and cumulative environmental impacts have been disclosed in the EA. Analysis indicated no significant impacts on society as a whole, the affected region, the affected interests, or the locality. The physical and biological effects are limited to the Little Snake Resource Area and adjacent land.
2. Public health and safety would not be adversely impacted. There are no known or anticipated concerns with project waste or hazardous materials.
3. There would be no adverse impacts to regional or local air quality, prime or unique farmlands, known paleontological resources on public land within the area, wetlands, floodplain, areas with unique characteristics, ecologically critical areas, or designated Areas of Critical Environmental Concern.
4. There are no highly controversial effects on the environment.
5. There are no effects that are highly uncertain or involve unique or unknown risk. Sufficient information on risk is available based on information in the EA and other past actions of a similar nature.
6. This alternative does not set a precedent for other actions that may be implemented in the future to meet the goals and objectives of adopted Federal, State, or local natural resource related plans, policies, or programs.
7. No cumulative impacts related to other actions that would have a significant adverse impact were identified or are anticipated.
8. Based on previous and ongoing cultural surveys, and through mitigation by avoidance, no adverse impacts to cultural resources were identified or anticipated. There are no known American Indian religious concerns or persons or groups who might be disproportionately and adversely affected as anticipated by the Environmental Justice Policy.

9. No adverse impacts to any threatened or endangered species or their habitat that was determined to be critical under the Endangered Species Act were identified. If, at a future time, there could be the potential for adverse impacts, treatments would be modified or mitigated not to have an adverse effect or new analysis would be conducted.

10. This alternative is in compliance with relevant Federal, State, and local laws, regulations, and requirements for the protection of the environment.

**DECISION AND RATIONALE:** I have determined that approving this APD is in conformance with the approved land use plan. It is my decision to implement the project with the mitigation measures provided in the Application for Permit to Drill and the Conditions of Approval. The project will be monitored as stated in the Compliance Plan outlined below.

**MITIGATION MEASURES:** The mitigation measures for this project are found in the file room of the Little Snake Field Office. The APD 12-point surface use plan, well location maps, and the Conditions of Approval are found in the well case file labeled COC61504, Cherokee Ridge Well #27-31.

### **COMPLIANCE PLAN(S):**

#### **Compliance Schedule**

Compliance will be conducted during the construction phase and drilling phase to insure that all terms and conditions specified in the lease and the approved APD are followed. In the event a producing well is established, periodic inspections as identified through the Inspection and Enforcement Strategy and independent well observations will be conducted. File inspections will include a review of all required reports and the Monthly Report of Operations will be evaluated for accuracy.

#### **Monitoring Plan**

The well location and access road will be monitored during the term of the lease for compliance with pertinent Regulations, Onshore Orders, Notices to Lessees, or subsequent COAs until final abandonment is granted; monitoring will help determine the effectiveness of mitigation and document the need for additional mitigative measures.

#### **Assignment of Responsibility**

Responsibility for implementation of the compliance schedule and monitoring plan will be assigned to the Fluid Mineral staff in the Little Snake Field Office. The primary inspector will be the Petroleum Engineering Technician, but the Petroleum Engineer, Natural Resource Specialist, Realty Specialist, and Land Law Examiner will also be involved.

**SIGNATURE OF PREPARER: /s/ Shawna Wiser**

**DATE SIGNED: 03/03/10**

**SIGNATURE OF ENVIRONMENTAL REVIEWER: /s/ Jeremy Casterson**

**DATE SIGNED: 03/03/10**

**SIGNATURE OF AUTHORIZED OFFICIAL: /s/ Roy McKinstry**

**DATE SIGNED: 03/03/10**